



PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference PETRNP/7751		FOR FURTHER ACTION		See Form PCT/PEA/416
International application No. PCT/EP2004/000184		International filing date (day/month/year) 14.01.2004		Priority date (day/month/year) 21.01.2003
International Patent Classification (IPC) or national classification and IPC B05B11/00				
Applicant SPRAY PLAST S.P.A. et al				
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 4 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> sent to the applicant and to the International Bureau) a total of 2 sheets, as follows:</p> <p><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>				
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input checked="" type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>				
Date of submission of the demand 18.08.2004		Date of completion of this report 28.04.2005		
Name and mailing address of the International preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized Officer Innecken, A Telephone No. +49 89 2399-8911 		

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/EP2004/000184

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language, which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*

Description, Pages

1-8 as originally filed

Claims, Numbers

1-8 received on 18.08.2004 with letter of 17.08.2004

Drawings, Sheets

1/5-5/5 as originally filed

☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
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Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-8
	No: Claims	
Inventive step (IS)	Yes: Claims	1-8
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-8
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

**INTERNATIONAL PRELIMINARY
REPORT ON PATENTABILITY
(SEPARATE SHEET)**

International application No.

PCT/EP2004/000184

Novelty, inventive step and industrial applicability (Item V)

1. Independent claims 1 meets the requirements of novelty, inventive step and industrial application according to Articles 33(2) to 33(4) PCT.
2. The subject-matter of independent claim 1 is novel as none of the prior art documents cited in the Search Report or acknowledged in the description discloses all of the features of this claim.
3. The documents cited in the Search Report do not render any suggestion to a skilled person to construct a sprayer device as disclosed in EP850695 according to the further features of claim 1. The features concerning the arrangement of a housing seat suited to integrally engage a central portion of said valve being disposed in said rear wall of the chamber, in a central portion between said input hole and said output hole, result from a step being non-obvious in view of the cited prior art documents in which no incentive is given to provide this specific structure and arrangement. Thus the sprayer device according to independent claim 1 involves an inventive step.
4. The sprayer device of claim 1 is able to work and can be manufactured. Thus the subject-matter of claim 1 is looked upon as being industrially applicable.
5. Dependent claims 2 to 8 define further advantageous and non-obvious variations of the sprayer device according to claim 1 and thus equally meet the requirements of novelty, inventive step and industrial application according to Articles 33(2) to 33(4) PCT.

Certain defects in the international application

6. The description does not cite a document reflecting the closest background art (see Rule 5.1a) ii) PCT).
7. The description does not disclose the invention as claimed (see Rule 5.1a) iii) PCT).

CLAIMS

1. A sprayer device (10) with a trigger-operated pump comprising:
- a body (14) provided with a base that can be applied to the mouth of a liquid container and a delivery nozzle (15) wherefrom the liquid is sprayed, in said body (14) being formed a plunger chamber (20), an input duct (37) which puts the inside of the container into communication with said chamber (20) and an output duct (38) which puts said chamber (20) into communication with the sprayer nozzle (15),
 - a trigger lever (29) hinged to said sprayer body (14) and to the stem (32) of a plunger (33) tightly acting in said chamber (20) defined in the sprayer body (14),
 - spring means (60) interposed between said trigger (29) and said sprayer body (14), and
 - a suction and delivery valve (100) disposed inside said chamber (20) of the sprayer body to generate a first one-way passage between said input duct (37) of the sprayer body and said chamber (20) and a second one-way passage between said chamber (20) and said output duct (38) of the sprayer body,
- characterised in that
- said input duct (37) has an input hole (34) communicating with said chamber (20), said output duct (38) has an output hole (35) communicating with said chamber (20) and in that a valve-housing seat (36) - communicating with said chamber (20) to support said suction and delivery valve (100) - is provided in the body (14) between said input hole (34) and said output hole (35).
2. A sprayer device according to claim 1, characterised in that said suction and delivery valve (100) comprises:
- a central portion (102) engageable integrally in said valve-housing seat (36) formed in the body (14),
 - an upper portion (110) acting as a shutter for said output hole (35), and
 - a lower portion (120) acting as a shutter for said input hole (34).
3. A sprayer device according to claim 2, characterised in that said upper portion of the valve (110) comprises a frustoconical tang (112) with a blind hole (113) tapered so as to generate a side wall thin enough to be deformed radially inward by the liquid

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ART 19 AMDT

AMENDED CLAIMS

[received by the International Bureau on 27 July 2004 (27.07.04);
original claims 1 and 2 amended; remaining claims unchanged (1 page)]

1. A sprayer device (10) with a trigger-operated pump comprising:
- a body (14) provided with a base that can be applied to the mouth of a liquid
5 container and a delivery nozzle (15) wherefrom the liquid is sprayed, in said body (14) being formed a plunger chamber (20), an input duct (37) which puts the inside of the container into communication with said chamber (20) and an output duct (38) which puts said chamber (20) into communication with the sprayer nozzle (15), **through an input hole (34) and an output hole (35) respectively, formed in the rear wall of**
10 **said chamber (20),**
 - a trigger lever (29) hinged to said sprayer body (14) and to the stem (32) of a plunger (33) tightly acting in said chamber (20) defined in the sprayer body (14),
 - spring means (60) interposed between said trigger (29) and said sprayer body (14), and
 - 15 - a suction and delivery valve (100) disposed inside said chamber (20) of the sprayer body to generate a first one-way passage between said input duct (37) of the sprayer body and said chamber (20) and a second one-way passage between said chamber (20) and said output duct (38) of the sprayer body, characterised in that
 - 20 **a housing seat (36) suited to integrally engage a central portion (102) of said valve (100) is disposed in said rear wall of the chamber (20), in a central position between said input hole (34) and said output hole (35),**

2. A sprayer device according to claim 1, characterised in that said suction and
25 delivery valve (100), **with respect to said central portion (102) engageable integrally in said valve-housing seat (36) formed in the body (14), comprises:**
- an upper portion (110) acting as a shutter for said output hole (35), and
 - a lower portion (120) acting as a shutter for said input hole (34).

- 30 3. A sprayer device according to claim 2, characterised in that said upper portion of the valve (110) comprises a frustoconical tang (112) with a blind hole (113) tapered so as to generate a side wall thin enough to be deformed radially inward by the liquid

pressure, said frustoconical tang (112) engaging in said output hole (35) formed in the sprayer body.

4. A sprayer device according to claim 2 or 3, characterised in that said lower
5 portion (110) comprises a substantially dome-shaped portion (122) connected to the valve body (101) by means of two flexible bridges (101'), said dome-shaped portion (122) engaging in said input hole (34) formed in the sprayer body.

5. A sprayer device according to any one of the preceding claims, characterised in
10 that said spring means comprise a leaf spring (60) consisting of two elastic arms (61), disposed parallel to each other, in which each arm (61) is substantially C-shaped in a side view.

6. A sprayer device according to claim 5, characterised in that said elastic arms
15 (61) are connected to each other, at one of their ends, by a cross connecting bar (62), so that the free ends (63) of the arms (61) are constrained to the trigger (29) and the cross connecting bar (62) abuts against the body (14) of the sprayer.

7. A sprayer device according to claim 6, characterised in that the free ends (63)
20 of said elastic arms (61) of the spring are constrained to the trigger (29) at the point of constraint (31) in which the stem (32) of the piston is hinged and said cross connecting bar (62) of the spring abuts against the body (14) of the sprayer forwardly beneath the piston chamber.

25 8. A sprayer device according to any one of claims 5 to 7, characterised in that said leaf spring (60) is made in a single piece from acetal resin.

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ART 34 AMDT